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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,542	12/12/2003	Jae Gark Choi	51876P209C	9698

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EXAMINER	
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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/734,542	CHOI ET AL.	
	Examiner	Art Unit	
	Tung Vo	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/12/03* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (US 6,400,831).

Re claim 1, Lee teaches a video object segmentation method applicable to a video system, comprising the steps of: a) defining and primarily segmenting objects existing in a frame of a video sequence manually or semi-manually (100 of fig. 1; wherein figure 11 shows defining and segmenting objects) ; and

b) automatically segmenting the objects defined and segmented the first frame (F0, 100 of fig. 2) in a second frame (F1 of fig. 2) within a moving video sequence (video is moving video sequence, col. 3, lines 40-50) by performing object-tracking based on movement of the objects defined and segmented in the first frame (108 of fig. 2; col. 4, lines 6-8, note objects are identified according to a semantic basis and their movement tracked throughout video frames, F0, F1, and F2 of fig. 2).

Re claim 2, Lee further discloses the steps of: c) determining whether any scene change is made between consecutive frames or any new object other than the primarily

segmented object appears within the video sequence being automatically segmented, when repeatedly performing the step b) for consecutive frames (Col. 4, lines 11-17; Note Global motion estimation is used to provide a very complete motion description for scene change from frame to frame, and is employed to track object motion during unsupervised processing); and d) repeatedly performing the first step, if the answer of the step of determining is positive (Note I frame is detected, which inherently means a new scene in a video sequence and the system repeatedly segments video objects (fig. 2) in the video sequence; col. 3, lines 49-51, Note automatic processing is repeated for subsequent video frames).

Re claim 3, Lee further discloses the steps of: e) examining the quality of automatically segmented results (100 of fig. 1), if there is no scene change between consecutive frames and any new object other than the primarily segmented object does not appear within the video sequence being automatically segmented (col. 6, line 60-col. 7, line 12); f) performing the second step, if the quality of automatically segmented results is satisfactory (116 and 118 of fig. 2, F0 and F1 are compared to produce a video object V0); and g) repeatedly performing the first step, if the quality of automatically segmented results is not satisfactory (col. 7, lines 12-36).

Re claim 4, Lee further discloses wherein the first step of primarily segmentation is made by segmenting the objects within the frame in completely manual using an user interface tool (figs. 1 and 2; col. 5, lines 40-67).

Re claim 5, Lee further discloses wherein the first step of primarily segmentation is made by segmenting the object within the frame in semi-manual, such that, if the user designates manually a rough boundary line of the object within the frame, then the object

within the frame is automatically segmented based on the designation-related information and an image segmentation information (fig. 1; col. 3, lines 52-64).

Re claim 6, Lee further discloses wherein the second step of automatically segmentation comprises the step of: tracking the object region in the current frame to which the primarily segmented video object in the previous frame is moved, so as to segment the object within the frame of the consecutive frames (col. 3, lines 60-63).

Re claim 7, Lee further discloses wherein the image segmentation information is a spatial information including a brightness information and a color information (gray-scale and color; figs. 6, 12, and 13).

3. Claims 1 and 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Courtney (US 5,969,755).

Re claim 1, Courtney discloses a video object segmentation (fig. 5) method applicable to a video system (11 of fig. 5), comprising the steps of:

a) defining and primarily segmenting objects existing in a first frame of a video sequence manually or semi-manually based on spatial information (21 of fig. 5, note moving objects are detected in a video sequence using a motion segmentor (21)); and

b) automatically segmenting (22 of fig. 5) the objects defined and segmented the first frame in a second frame within a video sequence (col. 7, line 52-col. 8, line 4, , note the V_objects are tracked both forward and backward, and frame to frame), by performing object-tracking based on movement of the objects defined and segmented in the first frame (22 of fig. 5, note the object tracking process results in a lest of V-objects, wherein the V-objects are tracked both forward and backward, and frames to frame).

Re claim 4, Courtney further discloses wherein the first step of primarily segmentation is made by segmenting the objects within the frame in completely manual using an user interface tool (28 of fig. 5).

Re claim 5, Courtney further discloses wherein the first step of primarily segmentation is made by segmenting the object within the frame in semi-manual, such that, if the user designates manually a rough boundary line of the object within the frame, then the object within the frame is automatically segmented based on the designation-related information and an image segmentation information (fig. 4, Note video data, motion segment (boundary of the object), motion graph, see also fig. 7)).

Re claim 6, Courtney further discloses wherein the second step of automatically segmentation comprises the step of: tracking the object region in the current frame to which the primarily segmented video object in the previous frame is moved, so as to segment the object within the frame of the consecutive frames (fig. 3).

Re claim 7, Lee further discloses wherein the image segmentation information is a spatial information including a brightness information and a color information (figs. 3, 4, 6, and 7).

4. Claims 1-2, and 4-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Hampapur et al. (US 6,738,100).

Re claim 1, Hampapur discloses a video object segmentation method applicable to a video system, comprising the steps of: a) defining and primarily segmenting objects existing in a first frame of a video sequence manually or semi-manually (fig. 2, Note see

USER QUERY INTERACTION of fig. 1, See also figure 2, wherein objects are segmented in image 1, BROWN BULDING, BLUE SKY, and GREEN LAWNS); and

b) automatically segmenting the objects defined and segmented the first frame (extracting each of the objects in image 1 of fig. 2) in a second frame (IMAGE 2 of fig. 2) within a moving video sequence (fig. 2, see also figs. 9 and 10, Note objects within a video sequence) by performing object-tracking based on movement of the objects defined and segmented in the first frame (the comparison of IMAGE 1 AND IMAGE 2 of figure 2, to track objects, BUILDING AND CAR) .

Re claim 2, Hampapur further discloses the steps of: c) determining whether any scene change is made between consecutive frames or any new object other than the primarily segmented object appears within the video sequence being automatically segmented, when repeatedly performing the step (col. 3, lines 32-49); b) for consecutive frames (fig. 2); and d) repeatedly performing the first step, if the answer of the step of determining is positive (col. 3, lines 21-25, Note the two stage process is then repeated to identify additional keyframes until the end of the video. If a particular frame does not exceed either the first or second threshold, the next frame, after a user-selectable time delta, is processed).

Re claim 4, Hampapur further discloses wherein the first step of primarily segmentation is made by segmenting the objects within the frame in completely manual using an user interface tool (USER QUERY INTERACTION of fig. 1).

Re claim 5, Hampapur further discloses wherein the first step of primarily segmentation is made by segmenting the object within the frame in semi-manual, such that, if the user designates manually a rough boundary line of the object within the frame,

then the object within the frame is automatically segmented based on the designation-related information and an image segmentation information (5.5 of fig. 7, Note edge image; fig. 8).

Re claim 6, Hampapur further discloses wherein the second step of automatically segmentation comprises the step of: tracking the object region in the current frame to which the primarily segmented video object in the previous frame is moved, so as to segment the object within the frame of the consecutive frames (fig. 8).

Re claim 7, Hampapur further discloses wherein the image segmentation information is a spatial information including a brightness information and a color information (fig. 6).

5. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Gu (6,075,875).

Re claim 1, Gu discloses a video object segmentation method applicable to a video system (fig. 29), comprising the steps of: a) defining and primarily segmenting objects existing in a first frame (1102n-1 of fig. 29) of a video sequence manually or semi-manually based on spatial information (1108n and 1110n of fig. 29); and b) automatically segmenting the objects defined and segmented the first frame in a second frame (1112n of fig. 29) within a moving video sequence by performing object-tracking based on movement of the objects defined and segmented in the first frame (1116n+1 of fig. 1, see also 1116n+2 of fig. 29 for next frames).

Re claim 2, Gu further discloses the steps of: c) determining whether any scene change is made between consecutive frames or any new object other than the primarily

segmented object appears within the video sequence being automatically segmented, when repeatedly performing the step b) for consecutive frames; and d) repeatedly performing the first step, if the answer of the step of determining is positive (INTRAFRAME MODE, 1104 of fig. 29, for scene change).

Re claim 3, Gu further discloses the steps of: e) examining the quality of automatically segmented results, if there is no scene change between consecutive frames and any new object other than the primarily segmented object does not appear within the video sequence being automatically segmented (NOT INTRAFRAME MODE, 1104 of fig. 29, go to INTERFRAME MODE, 1114 of fig. 29); f) performing the second step, if the quality of automatically segmented results is satisfactory (1116n+1, 1116n+2, 1112n+1, 1112n+2); and g) repeatedly performing the first step, if the quality of automatically segmented results is not satisfactory (NOTE MOVING OBJECT SEGMENTATION AND TRACKING is repeatedly process).

Re claim 4, Gu further wherein the first step of primarily segmentation (fig. 29) is made by segmenting the objects within the frame in completely manual using an user interface tool (26 of fig. 1).

Re claim 5, Gu further discloses wherein the first step of primarily segmentation is made by segmenting the object within the frame in semi-manual, such that, if the user designates manually a rough boundary line of the object within the frame, then the object within the frame is automatically segmented based on the designation-related information and an image segmentation information (figures 37A-37F, note motion boundary 1256 is determined in accordance with the motion segmentation process of this invention).

Re claim 6, Gu further discloses wherein the second step of automatically segmentation comprises the step of: tracking the object region in the current frame to which the primarily segmented video object in the previous frame is moved, so as to segment the object within the frame of the consecutive frames (116n+1 and 116n+2 of fig. 29, In+1, In+2 of fig. 29).

Re claim 7, Gu further discloses wherein the image segmentation information is a spatial information including a brightness information and a color information (Fig. 37C, note shows within each of the video image frames 1250 spatial boundaries 1258 (represented as white lines) that generally distinguish distinct spatial or color image features of character 1252 and background 1254).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tung Vo/

Primary Examiner, Art Unit 2621